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Notice of Allowability

Application No.

10/816,011

Examiner

Charles D. Adams

Applicant(s)

RADESTOCK ET AL.

Art Unit

2164

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the interview of 21 August 2007.
2. ☒ The allowed claim(s) is/are 1-3,5-7,9,11-13 and 22-31.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 21 August 2007.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

C. Rones

CHARLES RONES
SUPERVISORY PATENT EXAMINER

DETAILED ACTION

Remarks

1. In response to the interview of 21 August 2007, claims 1, 9, 22, 23 are amended, claims 4, 8, 10, 14-21 are cancelled, and claims 24-31 are added per applicant's request. Claims 1-3, 5-7, 9, 11-13, 22-31 are pending in the application.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Joseph Juliano on 29 August 2007.

3. In Claims:

1. (Currently Amended) A computer-implemented method of executing a query on a data repository, the method comprising:

receiving a query for execution on data in the data repository;

generating an estimate of a number of results of the query in accordance with the following estimation functions:

$$\underline{est(NOT) = N - est(op)_1}$$

$$\underline{est(AND) = \frac{est(op_1) * est(op_2)}{N}}, \text{ and}$$

$$\underline{est(OR) = est(op_1) + est(op_2) - \frac{est(op_1) * est(op_2)}{N}}$$

where op is an operand, $est()$ returns an estimate of a number of results matching the an operator or the operand in parenthesis, and N is the total number of possible results;

defining a subset of data in the data repository;

determining whether to execute the query on the subset of the data, the query to be executed on the subset of the data if the estimate of the number of results of the query indicates that executing the query on the subset of the data is estimated to return a number of results greater than a threshold number;

~~if the query is to be executed on the subset of the data, executing the query on the subset of the data to generate a partial set of results, otherwise executing the query on the data repository to generate a complete set of results; and~~

executing the query on the subset of the data to generate a partial set of results based on the determining whether to execute the query on the subset of the data resulting in a determination to execute the query on the subset of a data; otherwise executing the query on the data repository to generate a complete set of results based on the determining; and

providing query results the partial set of results of the execution of the query or the complete set of results of the execution of the query.

2. (Currently Amended) [[A]] ~~The method in accordance with~~ of claim 1, wherein providing query results comprises making the query results available to an application program.

3. (Currently Amended) [[A]] ~~The method in accordance with~~ of claim 2, further comprising:

the application program providing query results to a user interface.

4. (Canceled)

5. (Currently Amended) ~~[[A]]~~ The method ~~in accordance with~~ of claim 1, wherein determining whether to execute the query on the subset of the data comprises estimating whether executing the query on the subset of the data would generate a desired number of results, the method further comprising:

receiving a value representing the desired number of results.

6. (Currently Amended) ~~[[A]]~~ The method ~~in accordance with~~ of claim 1, wherein:

the method further comprises receiving a value representing a desired number of results;

the query is to be executed on the subset of the data if the estimate of the number of results of the query is greater than a weighted subset estimate generated in accordance with estimation function:

$$R * \frac{N}{stripeSize} * F, \text{ where } R \text{ is the number of results desired, } N \text{ is the total number}$$

of possible results, F is a safety factor, and $stripeSize$ is the size of the subset of the data; and

determining whether to execute the query on the subset of the data comprises:

generating the weighted subset estimate; and

determining whether the estimate of the number of results of the query is greater than the weighted subset estimate.

7. (Currently Amended) ~~[[A]]~~ The method ~~in accordance with~~ of claim 1 further comprising:

in response to executing the query on a previous subset of the data, determining whether a sufficient number of results have been generated; and

if a sufficient number of results have been generated, defining a next subset of the data in the data repository and executing the query on the next subset of the data, otherwise executing the query on the data repository.

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8. (Canceled)

9. (Currently Amended) An information management system including a processor, the system comprising:

a data repository, wherein the data repository is configured to store data; and
one or more processes for executing queries on the data repository, wherein the one or more processes are operative to:

receive a query for execution on data in the data repository;

generate an estimate of a number of results of the query in accordance with the following estimation functions:

$$\underline{est(NOT) = N - est(op)}_1$$

$$\underline{est(AND) = \frac{est(op_1) * est(op_2)}{N}}_1 \text{ , and}$$

$$\underline{est(OR) = est(op_1) + est(op_2) - \frac{est(op_1) * est(op_2)}{N}}_1$$

where op is an operand, $est()$ returns an estimate of a number of results matching the an operator or operand in parenthesis, and N is the total number of possible results;

define a subset of data in the data repository;

determine whether to execute the query on the subset of the data, the query to be executed on the subset of the data if the estimate of the number of results of the query indicates that executing the query on the subset of the data is estimated to return a number of results greater than a threshold number;

execute the query on the subset of the data to generate a partial set of results based on the determining whether to execute the query on the subset of the data resulting in a determination to execute the query on the subset of a data;

otherwise executing the query on the data repository to generate a complete set of results based on the determining; and

~~if the query is to be executed on the subset of the data, execute the query on the subset of the data to generate a partial set of results, otherwise execute the query on the data repository to generate a complete set of results; and~~

provide query results the partial set of results of the execution of the query or the complete set of results of the execution of the query.

10. (Canceled)

11. (Currently Amended) ~~An~~ The information management system ~~in accordance with~~ of claim 9, wherein the operation of providing query results comprises making the query results available to an application program.

12. (Currently Amended) ~~An~~ The information management system ~~in accordance with~~ of claim 9, wherein the operation of determining whether to execute the query on the subset of the data comprises estimating whether executing the query on the subset of the data would generate a desired number of results, the one or more processes are further operative to:

receive a value representing the desired number of results.

13. (Currently Amended) ~~An~~ The information management system ~~in accordance with~~
of claim 9, wherein the one or more processes are further operative to:

in response to executing the query on a previous subset of the data, determine
whether a sufficient number of results have been generated; and

if a sufficient number of results have been generated, define a next subset of the
data in the data repository and execute the query on the next subset of the data,
otherwise execute the query on the data repository.

14. (Canceled)

15. (Canceled)

16. (Canceled)

17. (Canceled)

18. (Canceled)

19. (Canceled)

20. (Canceled)

21. (Canceled)

22. (Currently Amended) A computer program product, ~~tangibly embodied on an~~
~~information carrier~~ stored on a computer-readable storage medium, the computer
program product comprising instructions operable to cause data processing apparatus
to:

generate a weighted subset estimate of performing a query on a data repository
in accordance with ~~the following~~ estimation function:

$$R * \frac{N}{stripeSize} * F, \text{ where } R \text{ is a number of results desired, } N \text{ is the total number of}$$

possible results, F is a safety factor, and $stripeSize$ is the size of the subset of the
data;

determine to execute the query on a subset of data in the data repository if the weighted subset estimate is greater than an estimate of the number of results of the query;

determine to execute the query on the data repository if the estimate of the number of results of the query is greater than the weighted subset estimate;

execute the query on the subset of data in the data repository to generate a partial set of results based on the determining to execute the query on the subset of data in the data repository or execute the query on the data repository to generate a complete set of results based on the determining to execute the query on the data repository; and

provide ~~query results~~ the partial set of results of the execution of the query or the complete set of results of the execution of the query.

23. (Currently Amended) A computer program product, ~~tangibly embodied on an information carrier stored on a computer-readable storage medium~~, the computer program product comprising instructions operable to cause data processing apparatus to:

generate an estimate of a number of results of a query in accordance with the following estimation functions:

$$est(NOT) = N - est(op) ,$$

$$est(AND) = \frac{est(op_1) * est(op_2)}{N} , \text{ and}$$

$$est(OR) = est(op_1) + est(op_2) - \frac{est(op_1) * est(op_2)}{N} ,$$

where *op* is an operand, *est()* returns an estimate of a number of results matching the an operator or the operand in parenthesis, and *N* is the total number of possible results;

determine to execute the query on a subset of data in the data repository if a weighted subset estimate is greater than the estimate of the number of results of the query;

determine to execute the query on the data repository if the estimate of the number of results of the query is greater than the weighted subset estimate;

execute the query on the subset of data in the data repository to generate a partial set of results based on the determining to execute the query on the subset of data in the data repository or execute the query on the data repository to generate a complete set of results based on the determining to execute the query on the data repository; and

provide query results the partial set of results of the execution of the query or the complete set of results of the execution of the query.

24. (New) ~~[[A]]~~ The computer program product ~~in accordance with~~ of claim 22, wherein the instructions are further operative to:

in response to executing the query on a previous subset of the data, determine whether a sufficient number of results have been generated; and

if a sufficient number of results have been generated, define a next subset of the data in the data repository and executing the query on the next subset of the data, otherwise executing the query on the data repository.

25. (New) ~~[[A]]~~ The computer program product ~~in accordance with~~ of claim 22, wherein the estimate of the number of results of the query is generated in accordance with estimation functions:

$$est(NOT) = N - est(op) ,$$

$$est(AND) = \frac{est(op_1) * est(op_2)}{N} , \text{ and}$$

$$est(OR) = est(op_1) + est(op_2) - \frac{est(op_1) * est(op_2)}{N} ,$$

where op is an operand, $est()$ returns an estimate of a number of results matching ~~the~~ an operator or the operand in the parenthesis, and N is the total number of possible results.

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26. (New) ~~[[A]]~~ The computer program product ~~in accordance with~~ of claim 23, wherein the instructions are further operable to cause the data processing apparatus to:

in response to executing the query on a previous subset of the data, determine whether a sufficient number of results have been generated; and

if a sufficient number of results have been generated, define a next subset of the data in the data repository and executing the query on the next subset of the data, otherwise executing the query on the data repository.

27. (New) ~~[[An]]~~ The information management system ~~in accordance with~~ of claim 9, wherein:

the query is to be executed on the subset of the data if the estimate of the number of results of the query is greater than a weighted subset estimate generated in accordance with estimation function:

$$R * \frac{N}{stripeSize} * F, \text{ where } R \text{ is a number of results desired, } N \text{ is the total number of}$$

possible results, F is a safety factor, and *stripeSize* is the size of the subset of the data; and

determining whether to execute the query on the subset of the data comprises:

generating the weighted subset estimate; and

determining whether the estimate of the number of results of the query is greater than the weighted subset estimate.

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28. (New) An information management system including a processor, the system comprising:

a data repository, wherein the data repository is configured to store data; and
one or more processes for executing queries on the data repository, wherein the one or more processes are operative to:

generate a weighted subset estimate of performing a query on the data repository in accordance with ~~the following~~ estimation function:

$$R * \frac{N}{stripeSize} * F, \text{ where } R \text{ is a number of results desired, } N \text{ is the total}$$

number of possible results, F is a safety factor, and $stripeSize$ is the size of a subset of the data;

determine whether to execute the query on the subset of the data in the data repository, the query to be executed on the subset of the data in the data repository if an estimate of a number of results of the query is greater than the weighted subset estimate;

execute the query on the subset of data in the data repository to generate a partial set of results based on the determining whether to execute the query on the subset of the data in the data repository resulting in a determination to execute the query on the subset of the data; otherwise, executing the query on the data repository to generate a complete set of results based on the determining; and

provide query results the partial set of results of the execution of the query or the complete set of results of the execution of the query

29. (New) ~~[[An]]~~ The information management system ~~in accordance with~~ of claim 28, wherein the one or more processes are further operative to:

in response to executing the query on a previous subset of the data, determine whether a sufficient number of results have been generated; and

if a sufficient number of results have been generated, define a next subset of the data in the data repository and execute the query on the next subset of the data, otherwise execute the query on the data repository.

30. (New) A computer implemented method comprising:

generating a weighted subset estimate of performing a query on a data repository in accordance with ~~the~~ estimation function:

$$R * \frac{N}{stripeSize} * F, \text{ where } R \text{ is a number of results desired, } N \text{ is the total}$$

number of possible results, F is a safety factor, and $stripeSize$ is the size of a subset of data in the data repository;

determining whether to execute the query on the subset of the data in the data repository, the query to be executed on the subset of the data in the data repository if an estimate of a number of results of the query is greater than the weighted subset estimate;

executing the query on the subset of data in the data repository to generate a partial set of results based on the determining whether to execute the query on the subset of the data in the data repository resulting in a determination to execute the query on the subset of the data; otherwise, executing the query on the data repository to generate a complete set of results based on the determining; and

providing ~~query results~~ the partial set of results of the execution of the query or the complete set of results of the execution of the query

31. (New) [[A]] The method of claim 30 further comprising:

in response to executing the query on a previous subset of the data, determining whether a sufficient number of results have been generated; and

if a sufficient number of results have been generated, defining a next subset of the data in the data repository and executing the query on the next subset of the data, otherwise executing the query on the data repository.

Allowable Subject Matter

4. Claims 1-3, 5-7, 9, 11-13, and 22-31.

The following is an examiner's statement of reasons for allowance:

The prior art of record, alone or in combination, does not teach or fairly suggest the subject matter of independent claims 22 and 23, wherein the limitations include a series of formulas for estimating the number of results that a query will return. The subject matter of claim 22 teaches wherein the estimate of the number of results of a query can be determined by the formula of $R * \frac{N}{stripeSize} * F$, where R is a number of results desired, N is the total number of possible results, F is a safety factor, and $stripeSize$ is the size of a subset of data in the data repository. The subject matter of claim 23 teaches a series of formulas for determining the estimate of the number of results of a query by using the Boolean operators of the query, notably NOT, AND, and OR. Specifically, the prior art of record does not teach or suggest

$$est(NOT) = N - est(op) ,$$

$$est(AND) = \frac{est(op_1) * est(op_2)}{N} , \text{ and}$$

$$est(OR) = est(op_1) + est(op_2) - \frac{est(op_1) * est(op_2)}{N} ,$$

where op is an operand, $est()$ returns an estimate of a number of results matching the operator or operand in the parenthesis, and N is the total number of possible results.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles D. Adams whose telephone number is (571) 272-3938. The examiner can normally be reached on 8:30 AM - 5:00 PM, M - F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on (571) 272-4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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